

Subt D'

## CLAIMS

- 1 1. A method for forming a trimmed gate in a transistor comprising the steps of:  
2 forming a polysilicon portion of a gate conductor on a substrate having a  
3 semiconductor portion; and  
4 trimming the polysilicon portion by a selective film growth method.

- 1 2. The method of claim 1, wherein the selective film growth method comprises  
2 selective surface nitridation.

- 1 3. The method of claim 1, wherein the selective film growth method comprises  
2 selective surface oxidation.

- 1 4. The method of claim 1, wherein the step of trimming the polysilicon portion  
2 further comprises selectively compensating n-channel and p-channel devices.

- 1 5. The method of claim 1, additionally comprising the step of at least partially  
2 removing the trimming film.

- 1 6. The method of claim 1, wherein the trimming film is anisotropically etched,  
2 forming gate conductor spacers.

- 1 7. The method of claim 1, wherein the trimming film is silicon-rich and the method  
2 further comprises the step of forming additional nitride or oxide layers on the trimming  
3 film.

1 8. The method of claim 2, wherein the step of trimming the gate conductor by  
2 selective surface nitridation comprises exposing structures formed on the semiconductor  
3 portion to 50-1000 expose pulses of laser irradiation with an energy fluence of 200-700  
4 mJ/cm<sup>2</sup> in the presence of ammonia at a pressure of 10-1500 torr.

1 9. The method of claim 8, wherein the step of trimming the gate conductor by  
2 selective surface nitridation comprises exposing structures formed on the semiconductor  
3 portion to about 150 expose pulses of 308 nm laser irradiation with an energy fluence of  
4 400-500 mJ/cm<sup>2</sup> in the presence of ammonia at a pressure of about 300-500 torr.

1 10. The method of claim 9, wherein ammonia is supplied at about 100 ccm/min.

1 11. The method of claim 3, wherein the step of trimming the gate conductor by  
2 selective surface oxidation comprises exposing structures formed on the semiconductor  
3 portion to 50-1000 expose pulses of laser irradiation with an energy fluence of 100-600  
4 mJ/cm<sup>2</sup> in the presence of oxygen at a pressure of 1-760 torr.

1 12. The method of claim 11, wherein the step of trimming the gate conductor by  
2 selective surface oxidation comprises exposing structures formed on the semiconductor  
3 portion to about 150 expose pulses of 308 nm laser irradiation with an energy fluence of  
4 200-400 mJ/cm<sup>2</sup> in the presence of oxygen at a pressure of about 100-300 torr.

1 13. The method of claim 12, wherein oxygen is supplied at about 100 ccm/min.

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- 1 14. A method for forming selectively compensated semiconductor devices comprising  
2 the steps of:  
3 forming a plurality of polysilicon portions of gate conductors on a substrate  
4 having a semiconductor portion;  
5 masking at least one polysilicon portion intended for a n-channel device;  
6 trimming at least one unmasked polysilicon portion intended for a p-channel  
7 device by a selective film growth method, wherein the extent of trimming is selected to  
8 accomplish device compensation of the p-channel and n-channel devices.

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1 15. The method of claim 14, wherein the selective film growth method comprises  
2 selective surface nitridation.

- 1 16. The method of claim 14, wherein the selective film growth method comprises  
2 selective surface oxidation.

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1 17. The method of claim 15, wherein the step of trimming the gate conductor by  
2 selective surface nitridation comprises exposing structures formed on the semiconductor  
3 portion to about 150 expose pulses of 308 nm laser irradiation with an energy fluence of  
4 400-500 mJ/cm<sup>2</sup> in the presence of ammonia at a pressure of about 300-500 torr.

- 1 18. The method of claim 16, wherein the step of trimming the gate conductor by  
2 selective surface oxidation comprises exposing structures formed on the semiconductor  
3 portion to about 150 expose pulses of 308 nm laser irradiation with an energy fluence of  
4 200-400 mJ/cm<sup>2</sup> in the presence of oxygen at a pressure of about 100-300 torr.

1 19. A transistor comprising a trimmed polysilicon portion of a gate conductor,  
2 wherein the trimming occurred by a selective film growth method.

1 20. The transistor of claim 19, wherein n-channel and p-channel devices were  
2 selectively compensated by the trimming.

1 21. The transistor of claim 19, wherein a sufficient portion of the trimming film is  
2 removed by anisotropic etching to provide gate conductor spacers.

1 22. The transistor of claim 19, wherein the trimming film is silicon-rich, allowing  
2 additional nitride or oxide layers to be formed.

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